This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (previously amended): An isolated thymidylate synthase nucleic acid molecule of SEQ ID NO:1, wherein G is replaced by C at nucleotide 12.

Claim 2 (canceled).

Claim 3 (original): A single-stranded nucleic acid probe that hybridizes to the isolated nucleic acid molecule of claim 1, but not to SEQ ID NO: 1.

Claims 4-5 (canceled).

Claim 6 (previously amended): A diagnostic kit comprising the probe of claim 3, or an allele-specific nucleic acid primer of 8-40 nucleotides that specifically hybridizes to and detects a thymidylate synthase nucleic acid molecule of SEQ ID NO: 1, wherein G is replaced by C at nucleotide 12, and instructions for use.

Claims 7-10 (canceled).

Claim 11 (previously amended): A method for determining whether an individual has or has a heightened predisposition to cancer or cardiovascular disease, comprising:

(a) obtaining a sample from the individual comprising a thymidylate synthase nucleic acid molecule; and

(b) detecting one or more polymorphisms in the_thymidylate synthase nucleic acid molecule, wherein

(i) an individual with an 3R/3R construct in the 5' region of the thymidylate synthase nucleic acid molecule has or has a heightened predisposition to cancer or cardiovascular disease as compared to an individual with a 3R/3RV, 2R/2R, 2R/3R, or 2R/3RV construct;

(ii) an individual with a +6 bp/1494 3' untranslated region polymorphism of the thymidylate synthase nucleic acid molecule has or has a heightened predisposition to cancer or cardiovascular disease as compared to an individual with a -6 bp/1494 3' untranslated region polymorphism of the thymidylate synthase nucleic acid molecule;

(iii) an individual with both the 3R/3R construct in the 5' region and a +6 bp/1494 3' untranslated region polymorphism of the thymidylate synthase nucleic acid molecule has or has the highest probability of developing cancer or cardiovascular disease.

Claims 12-20 (canceled).